SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Date Form Completed: 10/07/14

General Site Information

Region:	7	City:	Columbus	State:	NE
CERCLIS EPA ID:	NED981713837		CERCLIS Site Name:	10th Street	
NPL Status: (P/F/D)	F		Year Listed to NPL:	1990	

Brief Site Description: *(Site Type, Current and Future Land Use, General Site Contaminant and Media Info, Site Area and Location information.)*

The 10th Street Site, located in Columbus, Nebraska, consists of three known areas of VOC-contaminated soil from dry cleaning operations: former One-Hour Martinizing (OHM), former Liberty Cleaners, and former Jackson Services. The groundwater contaminant plume extends over a mile from the OHM source area to the south and over ½ mile from west to east and includes the city's southern municipal well field. VOC contaminants have been detected in five of the seven municipal wells in the city's southern municipal well field and in the city's water distribution system. The groundwater plume is located beneath a developed mixture of commercial and residential properties. Future land use is not expected to change.

One of the major threats at the 10th Street Site is considered to be VOC-contaminated groundwater. The majority of the city's residents are served by the city's municipal water supply. Another major threat at the site is vapor intrusion (VI) which has been caused by contaminated soil and groundwater. VI monitoring and evaluation is ongoing. At this time, 12 vapor mitigation systems have been installed within the groundwater contaminant plume.

General Project Information

Type of Action:	Remedial Action	Site Charging SSID:	07CS
Operable Unit:	01 and 02	CERCLIS Action RAT Code:	

Is this the final action for the site that will result in a site construction completion? Final action but already CC ☒ Yes ☐ No

Will implementation of this action result in the Environmental Indicator for Human Exposure being brought under control? Already HEUC in short-term. Action will reduce time frame for LTHHP. ☒ Yes ☐ No

Response Action Summary

Describe briefly site activities conducted in the past or currently underway:

The 10th Street Site first came to the attention of the Nebraska Department of Health and Human Services System (NDHSS), in November 1983 when VOCs were detected in a routine sampling event of the city's municipal wells. In April 1987, the site was referred to the EPA for investigation. Exemption 5 - AWP, AC

EPA conducted the RI/FS which resulted in a February 1995 ROD. The remedy selected in the 1995 ROD included monitoring and institutional controls to limit exposure to contamination from the 10th Street Site. The remedy also included a contingency for extraction of contaminated groundwater with treatment, if necessary and discharge to the Loup River (approximately 2 mile south of the 10th Street Site).

Follow-up groundwater monitoring subsequent to the 1995 ROD indicated that increasingly higher concentrations of VOCs were detected about ½ mile upgradient of the original site and were attributed to the OHM source area. The EPA issued a general notice letter to the owner and operator of OHM on February 8, 1999. Demand letters were issued to representatives of Jackson Services, Liberty Cleaners, and OHM on September 12, 2000. The EPA has reached ability to pay settlements with all three parties.

EPA installed an air sparging/soil vapor extraction (AS/SVE) system at the OHM source area in October 2000. EPA issued an interim action ROD in September 2001 that included continued operation of the AS/SVE system, extraction of contaminated groundwater from one of the municipal wells, installation of additional extraction wells, treatment of the extracted groundwater, and reuse of the treated groundwater in the city's municipal water treatment system.

The groundwater extraction and treatment (GET) system required by the 2001 ROD has been designed, constructed and has been in operation since April 2004. Currently, about 70 % of the treated water from the GET system is provided to the city for use in their municipal water supply. The remaining 30% is discharged to the storm sewer. The system is being operated by the city through a cooperative agreement with EPA.

EPA has designated all actions prior to discovery of the OHM plume, including the 1995 ROD to be OU 1. All actions conducted subsequent to that time, including the AS/SVE system and the 2001 interim action ROD have been designated as OU 2.

An OU 2 ROD was signed in September 2005 and the OU 2 remedial design also started in September 2005. The remedy called for in the September 2005 ROD included continued operation of the AS/SVE and GET systems, insitu chemical oxidation (ISCO) in the most highly contaminated portion of the contaminant plume, and institutional controls in the all three source areas.

The AS/SVE and GET systems are still in operation although the AS/SVE system has had operational issues because of aging system components and a high water table. Currently only the upper portion of the vapor extraction system has been in operation.

ISCO was conducted pursuant to a site-specific contract from 2007 through 2009. A total of nine rounds of injections, using potassium permanganate ($KMNO_4$), were conducted in various portions of the plume. The ISCO injections had mixed results. Although the ISCO resulted in substantial reductions of contaminant mass in the groundwater in some areas of the site, rebound occurred because of contaminants in the vadose zone. Also, there were difficulties associated with distribution of the $KMNO_4$ in the less permeable portions of the aquifer.

Institutional controls in regard to environmental covenants to limit excavation and consumption of groundwater have been implemented at all three source areas.

The AS/SVE system, GET system, and ISCO have been effective in reducing contaminant concentrations in soil and groundwater, however, the EPA's evaluation of recent performance of each of these components indicates that the effectiveness of each of them is limited and will not result in achieving the remediation goal of

the Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) of 5 micrograms per liter (µg/L) for PCE and TCE and 70 µg/L for cis-1,2-DCE throughout the plume in the near future.

EPA decided to conduct additional investigations and a feasibility study to determine the extent of contamination that needs to be addressed and how best to address the contaminant plume. The results of the additional soil gas, soil and groundwater investigations are summarized in the Source Area Soil Sampling Data Summary Report. Soil sampling included collection of samples beneath each of the three source area buildings, which had not previously been performed. The results of this investigation determined that concentrations of contaminants in the source area soils substantially exceed soil cleanup levels established to prevent contaminant migration to groundwater. The April 2012 Focused Feasibility Study (FFS) Report summarizes the source area investigation and identifies and evaluates remedial alternatives to address the contamination.

Based on the April 2012 FFS, and other information in the Administrative Record, EPA finalized a ROD Amendment dated December 26, 2012 which includes the following components:

- Building demolition, excavation and off-site disposal of contaminated soil at all three source areas.
- ISCO, in situ chemical reduction and/or biological remediation to address contaminated groundwater at the OHM source area
- Operation of the GET system and limited ISCO to address contaminated groundwater at the former Jackson Services and former Liberty Cleaners source areas.
- Long-term response actions for the vapor mitigation systems that are being installed pursuant to a time-critical removal action
- Site-wide groundwater monitoring.

The above-listed actions are supplemental to the following remedial actions required by the 2005 ROD:

- Continued operation of the GET system
- Institutional controls in the source areas
- ISCO in the upgradient portion of the plume

The remedial design for the source area soil and groundwater remedial components of the 2012 ROD was submitted final in March 2014.

Specifically identify the discrete activities and site areas to be considered by this panel evaluation:

The 2012 ROD Amendment requires building demolition, soil excavation, and off-site disposal at all three source areas: the former OHM source area, the former Jackson Services source area, and the former Liberty Cleaners source area. The ROD Amendment also requires followup groundwater remediation at the source areas

Commented [LS1]:

Briefly describe additional work remaining at the site for construction completion after completion of discrete activities being ranked:

None. Construction Completion will have been achieved.

Response Action Cost

Total Cost of Proposed Response Action:

($ amount should represent total funding need for new RA funding from national allowance above and beyond those funds anticipated to be utilized through special accounts or State Superfund Contracts.)

$10,006,000

Source of Proposed Response Action Cost Amount:

(ROD, 30%, 60%, 90% RD, Contract Bid, USACE estimate, etc...)

100% RD Final Cost Estimate - April 2014

Breakout of Total Action Cost Planned Annual Need by Fiscal Year:

(If the estimated cost of the response action exceeds $10 million, please provide multiple funding scenarios for fiscal year needs; general planned annual need scenario, maximum funding scenario, and minimum funding scenario.)

FY2015	$3,976,673	Demolition of source area buildings, excavation and off-site disposal of contaminated soil
FY2016	$1,015,673	Capital costs for groundwater remediation at all three source areas
FY2017	$119,000	One year of LTRA of groundwater remediation systems
Total	$5,111,346	

Other information or assumptions associated with cost estimates?

All costs are based on estimates from the 100% remedial design for source area soil and groundwater remediation (RD March 2014; Cost Estimate April 2014)

Readiness Criteria

1. Date State Superfund Contract or State Cooperative Agreement will be signed (Month)?

July 2013

2. If Non-Time Critical, is State cost sharing (provide details)?

Not applicable

3. If Remedial Action, when will Remedial Design be 95% complete?

Design was 100% complete in March 2014.

4. When will Region be able to obligate money to the site?

The property acquisition and relocation of tenants is occurring in FY2014 under a Cooperative Agreement with USACE. Properties are expected to be acquired and tenants relocated by 12/31/14. After this date, the soil and groundwater remediation can proceed per the Remedial Design (RD) for building demolition, excavation of

contaminated soil, off-site disposal, and followup groundwater treatment at the source areas. Region 7 would be able to obligate funds as soon as an RA contract is procured.

5. Estimate when on-site construction activities will begin:

May 2015.

6. Has CERCLIS been updated to consistently reflect project cost/readiness information?

Yes

Site/Project Name:	**10th Street**

Criteria #1 - RISKS TO HUMAN POPULATION EXPOSED (Weight Factor = 5)

Describe the exposure scenario(s) driving the risk and remedy. Include risk and exposure information on current/future use, on-site/off-site, media, exposure route, and receptors:

Residents in the city are reliant on the local aquifer as a source of drinking water. The 10th Street contaminant plume has impacted the southern municipal well field. The city also uses a well field located north of the city. However, this well field has limited capacity and cannot meet the city's demand. A Baseline Risk Assessment (BLRA) was prepared as part of the 2005 RI/FS. The BLRA determined that installation of drinking water wells into the most contaminated portion of the aquifer would pose unacceptable carcinogenic and noncarcinogenic human health risks. For the 2012 ROD Amendment, current contaminant concentration information was evaluated to determine the current level of cancer and noncancer risk that warrants remediation. This evaluation reaffirmed the findings of the 2005 BLRA.

Regarding the vapor intrusion pathway, two structures were identified where the indoor air screening level for TCE was exceeded. So far, a total of 15 structures located above the contaminant plume have been identified where either the indoor air screening levels or subslab screening levels have been exceeded.

The results of the latest investigation (summarized in the 2012 FFS) determined that concentrations of contaminants in the source area soils substantially exceed soil cleanup levels established to prevent contaminant migration to groundwater.

Estimate the number of people reasonably anticipated to be exposed in the absence of any future EPA action for each medium for the following time frames:

MEDIUM	<2yrs	<10yrs	>10yrs
GW	20,000		
Indoor air	45		

Discuss the likelihood that the above exposures will occur:

The southern municipal well field provides the water supply for the city of Columbus. If there were no EPA actions, VOCs concentrations in the city water supply would eventually exceed the MCL for TCE. In September 2000, prior to installation of the AS/SVE and GET systems, the concentration of TCE in the city

water distribution sample was at the MCL, and above the MCL in individual supply wells. EPA had to take actions to limit the exposure.

For the VI pathway, at least 15 structures located above the groundwater contaminant plume have been identified where either the indoor air or subslab risk-based screening levels have been exceeded. Assuming that an average of three people occupy each structure, this would be 45 people. VI sampling is continuing and more structures may be identified in the future where either indoor air or subslab screening levels are exceeded.

Other Risk/Exposure Information?

None

Site/Project Name:	**10th Street**

Criteria #2 – SITE/CONTAMINANT STABILITY (Weight Factor = 5)

Describe the means/likelihood that contamination could impact other areas/media given current containment:

If no actions are taken, the contaminant plume would continue to migrate and would cause more above-ground structures to exceed VI action levels. The city implemented a city ordinance that limits use of private wells within the Columbus Institutional Control Area (CICA). However, without EPA funding, the source areas will continue to release contamination to the groundwater plume that will cause the plume to increase in regard to contaminant concentrations and mobility. The plume could migrate outside of the CICA. The plume could also migrate to the Loup River and could impact ecological receptors or human receptors who use the river for recreation or fishing.

Are the contaminants contained in engineered structure(s) that currently prevents migration of contaminants? Is this structure sound and likely to maintain its integrity?

Yes, the AS/SVE and GET systems provide some level of containment. However the AS/SVE system has operational issues including aging system components and a high water table which has severely limited its ability to address contamination. The GET extraction system had to be constructed in order to not extract contaminated groundwater from two LUST sites and an FMGP site. Therefore, one of the extraction wells is not in an ideal location and some of the plume is not captured by the GET system. The GET system also requires frequent maintenance. Federal funding for both systems is expected to cease in January 2016 at the end of the LTRA period. Contaminants in soils beneath the source area buildings are not contained and pose a continuing threat to groundwater.

Are the contaminants in a physical form that limits the potential to migrate from the site? Is this physical condition reversible or permanent?

No, the contaminants are not in a physical form that limits the potential to migrate from the site.

Are there institutional physical controls that currently prevent exposure to contamination? How reliable is it estimated to be?

Yes, institutional controls have been implemented at each of the source areas in the form of environmental covenants. The city also implemented a city ordinance that limits use of private wells within the CICA. However, without EPA funding, the source areas will continue to release contamination to the groundwater plume that will cause the plume to increase in regard to contaminant concentrations and mobility. The plume could migrate outside of the CICA, and the length of time to achieve cleanup objectives for groundwater is estimated to be greater than 60 years.

Other information on site/contaminant stability?

None

Site/Project Name:	10th Street

Criteria #3 – CONTAMINANT CHARACTERISTICS (Weight Factor = 3)

(Concentration, toxicity, and volume or area contaminated above health based levels)

List Principle Contaminants (Please provide average and high concentrations.):

(Provide upper end concentration (e.g. 95% upper confidence level for the mean, as is used in a risk assessment, or maximum value [assuming it is not a true outlier], along with a measure of how values are distributed {e.g. standard deviation} or a central tendency values [e.g., average].)

Contaminant	*Media	**Concentrations
PCE	SL	Max - 360,000 µg/kg at Jackson Services source area
PCE	GW	Max -34,000 µg/L at OHM source area
PCE	AR	Max – 38,100 µg/m^3 subslab sample at Jackson Services source area
TCE	SL	Max – 14,000 µg/kg at Jackson Services source area
TCE	GW	Max – 390 at OHM source area
TCE	AR	Max – 3,490 µg/m^3 at OHM source area
cis-1,2-DCE	SL	Max – 5,200 µg/kg at Jackson Services source area
cis-1,2-DCE	GW	Max – 320 µg/L at OHM source area

*(*Media: AR – Air, SL – Soil, ST – Sediment, GW – Groundwater, SW – Surface Water)*

*(**Concentrations: Provide concentration measure used in the risk assessment and Record of Decision as the basis for the remedy.)*

Describe the characteristics of the contaminant with regards to its inherent toxicity and the significance of the concentrations and amount of the contaminant to site risk. *(Please include the clean up level of the contaminants discussed.)*

Tetrachloroethene (PCE) - "Likely to be carcinogenic in humans by all routes of exposure" according to a final assessment in February 2012 by the EPA IRIS program. The IRIS cancer and noncancer residential tapwater screening levels for PCE are 9.7 µg/L and 35 µg/L respectively. EPA requires remedial action when the cancer risk exceeds 1 x 10 $^{-4}$ and the hazard index (HI) exceeds 1. The HI is calculated by summation of all of the hazard quotients (HQs) for each contaminant. Maximum PCE groundwater concentration is 34,000 µg/L.

Cancer Risk = (34,000/9.7) x 1 x 10^{-6} = **3.5 x 10^{-3} which exceeds 1 x 10 $^{-4}$**
Noncancer HQ = (34,000/35) = **971 which exceeds 1**. The HI which would be derived by adding all of the HQs would be even higher.

Trichloroethene (TCE) – "Likely to be carcinogenic to humans by all routes of exposure" according to a final assessment in September 2011 by the EPA IRIS program. The International Agency for Research on Cancer (IARC) has classified TCE as a Group 2B probable human carcinogen.

CONTAMINANT	MEDIA	MAXIMUM CONCENTRATION (µg/kg)	SITE-SPECIFIC CLEANUP LEVEL for protection of groundwater (µg/kg)
PCE	SL	360,000	60

TCE	SL	14,000	60
cis-1,2-DCE	SL	5,200	400

CONTAMINANT	MEDIA	MAXIMUM CONCENTRATION (µg/L)	CLEANUP LEVEL is the MCL (µg/L)
PCE	GW	34,000	5
TCE	GW	390	5
cis-1,2-DCE	GW	320	70

CONTAMINANT	MEDIA	MAXIMUM CONCENTRATION (µg/m³)	*EPA Reg. 7 Screening Level (µg/m³)
PCE	Subslab AR	38,100	5,833
TCE	Subslab AR	3,490	293

*Screening level is based on either a 1 x 10-5 cancer risk or HI of 1 whichever is lower. Screening level is also based on industrial exposure, where highest detections occurred. Attenuation factor for subslab is 0.03.

Describe any additional information on contaminant concentrations which could provide a better context for the distribution, amount, and/or extent of site contamination. *(e.g. frequency of detection/outlier concentrations, exposure point concentrations, maximum or average concentration values, etc.....)*

Groundwater modeling conducted prior to issuance of the December 2012 ROD Amendment indicates that the time frame for achieving groundwater cleanup levels in the contaminant plume will be significantly reduced when the building demolition, excavation of contaminated soils, and off-site disposal at all three source areas is implemented. If this action is not implemented, the model predicts that it will take 60 years to achieve groundwater cleanup levels. If this action is implemented, groundwater cleanup levels are expected to be achieved in 15 years. This does not consider the additional reduction in time frame to achieve groundwater cleanup levels from followup *in situ* groundwater treatment at the source areas.

Other information on contaminant characteristics?

Site/Project Name:	10th Street

Criteria #4 – THREAT TO SIGNIFICANT ENVIRONMENT (Weight Factor = 3)
(Endangered species or their critical habitats, sensitive environmental areas.)

Describe any observed or predicted adverse impacts on ecological receptors including their ecological significance, the likelihood of impacts occurring, and the estimated size of impacted area:

There is no documented observation or prediction of an ecological impact at this Site as long as EPA funding is available. However, without EPA funding, the groundwater contaminant plume could reach the Loup River and could impact ecological receptors.

Would natural recovery occur if no action was taken? ☐ Yes ☒ No
If yes, estimate how long this would take.

No. Prior to the September 2001 ROD, data was collected and analyzed to determine the potential for natural attenuation of the contaminant plume. The conclusion was that natural attenuation would not be effective at the Site.

Other information on threat to significant environment?

None

Site/Project Name:	10th Street

Criteria #5 – PROGRAMMATIC CONSIDERATIONS (Weight Factor = 4)
(Innovative technologies, state/community acceptance, environmental justice, redevelopment, construction completion, economic redevelopment.)

Describe the degree to which the community accepts the response action.

The Proposed Plan was out for public comment from May 24 to June 23, 2012. EPA held a public meeting to present the Proposed Plan and preferred alternative on June 11, 2012. Questions and comments regarding the preferred alternative and other site-related issues were discussed at the meeting. EPA has received communication including a letter of support for the preferred alternative. EPA summarized and responded to all questions and comments received during the comment period in the Responsiveness Summary which is an Appendix to the ROD Amendment.

Describe the degree to which the State accepts the response action.

The State has concurred on the remedy in the December 2012 ROD Amendment.

Describe other programmatic considerations, e.g.; natural resource damage claim pending, Brownfields site, use of innovative technology, construction completion, economic redevelopment, environmental justice, etc...

This Remedial Action required by the December 2012 ROD Amendment will address contamination that will continue to be a source of contamination to the groundwater contaminant plume and indoor air if not addressed. Implementation of this action will allow the affected properties to not continue to release contamination to the groundwater and will allow economic redevelopment of these properties. The city also has concerns about city-owned buildings and economic development of housing within the contaminant plume because of indoor air issues. Implementation of the Remedial Action will contribute to economic development of properties within the contaminant plume. Construction Complete was achieved on the GET System in 2004.